

WHAT IS CLAIMED IS:

1. An organic electroluminescent device, which comprises a pair of electrodes, and a layer structure provided between the pair of electrodes and including a charge transport layer capable of transporting electrons or holes and an emission layer comprising a major proportion of an organic material capable of emitting light on application of a voltage thereto via the pair of electrodes, wherein the organic material undergoes concentration quenching and said emission layer has a thickness of 4 nm or below.

2. An organic electroluminescent device according to Claim 1, wherein said emission layer consists essentially of the organic material.

3. An organic electroluminescent device according to Claim 1, wherein said emission layer is the form of islands.

4. An organic electroluminescent device according to Claim 1, wherein said layer structure includes a hole transport layer and an electron transport layer wherein said emission layer is provided between said hole transport layer and said electron transport layer.

5. An organic electroluminescent device according to Claim 4, further comprising a hole block layer provided between said emission layer and said electron transport layer.

6. An organic electroluminescent device according to Claim 4,

further comprising an electron block layer provided between said emission layer and said hole transport layer.

7. An organic electroluminescent device according to Claim 4,
5 further comprising a mixed layer of a first organic material present in said emission layer and a second organic material present in said electron transport layer, which mixed layer being provided between said emission layer and said electron transport layer.

10 8. An organic electroluminescent device according to Claim 7, wherein a ratio between said first organic material and said second organic material is in the range of 1:100 to 4:5 on the molar basis.

15 9. An organic electroluminescent device according to Claim 4, further comprising a mixed layer of a first organic material present in said emission layer and a second organic material present in said hole transport layer, which mixed layer being provided between said emission layer and said hole transport layer.

20 10. An organic electroluminescent device according to Claim 7, wherein a ratio between said first organic material and said second organic material is in the range of 1:100 to 4:5 on the molar basis.

25 11. An organic electroluminescent device according to Claim 1, wherein said layer structure includes a hole transport layer and an electron transport layer wherein said emission layer is provided inbetween sub-layers of said hole transport layer.

12. An organic electroluminescent device according to Claim 11, wherein said emission layer is distant from an interface between said hole transport layer and the sub-layer of said hole transport layer in contact with said electron transport layer at 2 nm or below.

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13. An organic electroluminescent device according to Claim 1, wherein said layer structure includes a hole transport layer and an electron transport layer wherein said emission layer is provided inbetween sub-layers of said electron transport layer.

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14. An organic electroluminescent device according to Claim 13, wherein said emission layer is distant from an interface between the sub-layer of said electron transport layer in contact with said hole transport layer at 20 nm or below.

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15. An organic electroluminescent device according to Claim 1, wherein said layer structure includes a hole transport layer, an electron transport layer, and a plurality of emission layers formed at a corresponding number of portions including a portion between said hole transport layer and said electron transport layer, a portion between sub-layers of said hole transport layer, and at least one portion between sub-layers of said electron transport layer.

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16. An organic electroluminescent device according to Claim 1, wherein said emission layer has a multi-layered structure.

17. An organic electroluminescent device according to Claim 16,

wherein said emission layer has at least two sub-layers, respectively, made of a corresponding number of compounds capable of different color electroluminescent emissions.

5 18. An organic electroluminescent device according to Claim 1, wherein said emission layer is formed in a pattern having a number of emission regions.

10 19. An organic electroluminescent device according to Claim 18, wherein said pattern is a striped pattern.

20 20. An organic electroluminescent device according to Claim 18, wherein said pattern is a block pattern.

15 21. An organic electroluminescent device, which comprises a pair of electrodes, and a layer structure provided between the pair of electrodes and including a charge transport layer capable of transporting electrons or holes and an emission layer consisting essentially of an organic material capable of emitting light on
20 application of a voltage thereto via the pair of electrodes, wherein the organic material has a fluorescent lifetime shorter than that of an organic material present in the charge transport layer.

25 22. An organic electroluminescent device according to Claim 21, wherein said organic material has a fluorescent lifetime shorter than 10 nanoseconds.

23. An organic electroluminescent device according to Claim 21,

wherein said emission layer is the form of islands.

24. An organic electroluminescent device according to Claim 21,
wherein said layer structure includes a hole transport layer and an
5 electron transport layer wherein said emission layer is provided
between said hole transport layer and said electron transport layer.

25. An organic electroluminescent device according to Claim 24,
further comprising a hole block layer provided between said
10 emission layer and said electron transport layer.

26. An organic electroluminescent device according to Claim 24,
further comprising an electron block layer provided between said
15 emission layer and said hole transport layer.

27. An organic electroluminescent device according to Claim 24,
further comprising a mixed layer of a first organic material present
in said emission layer and a second organic material present in said
electron transport layer, which mixed layer being provided between
20 said emission layer and said electron transport layer.

28. An organic electroluminescent device according to Claim 27,
wherein a ratio between said first organic material and said second
organic material is in the range of 1:100 to 4:5 on the molar basis.

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29. An organic electroluminescent device according to Claim 24,
further comprising a mixed layer of a first organic material present
in said emission layer and a second organic material present in said

hole transport layer, which mixed layer being provided between said emission layer and said hole transport layer.

30. An organic electroluminescent device according to Claim 29,
5 wherein a ratio between said first organic material and said second organic material is in the range of 1:100 to 4:5 on the molar basis.

31. An organic electroluminescent device according to Claim 21,
wherein said layer structure includes a hole transport layer and an
10 electron transport layer wherein said emission layer is provided between sub-layers of said hole transport layer.

32. An organic electroluminescent device according to Claim 31,
wherein said emission layer is distant from an interface between
15 said hole transport layer and the sub-layer of said hole transport layer in contact with said electron transport layer at 2 nm or below.

33. An organic electroluminescent device according to Claim 21,
wherein said layer structure includes a hole transport layer and an
20 electron transport layer wherein said emission layer is provided between sub-layers of said electron transport layer.

34. An organic electroluminescent device according to Claim 33,
wherein said emission layer is distant from an interface between the
25 sub-layer of said electron transport layer in contact with said hole transport layer at 20 nm or below.

35. An organic electroluminescent device according to Claim 21,

wherein said layer structure includes a hole transport layer, an electron transport layer, and a plurality of emission layers formed at a corresponding number of portions including a portion between said hole transport layer and said electron transport layer, a portion
5 inbetween sub-layers of said hole transport layer, and at least one portion inbetween sub-layers of said electron transport layer.

36. An organic electroluminescent device according to Claim 21, wherein said emission layer has a multi-layered structure.

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37. An organic electroluminescent device according to Claim 36, wherein said emission layer has at least two sub-layers, respectively, made of a corresponding number of compounds capable of different color electroluminescent emissions.

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38. An organic electroluminescent device according to Claim 21, wherein said emission layer is formed in a pattern having a number of emission regions.

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39. An organic electroluminescent device according to Claim 38, wherein said pattern is a striped pattern.

40. An organic electroluminescent device according to Claim 38, wherein said pattern is a block pattern.

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